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10/532,886	04/27/2005	Keith Symonds	CHA-06-5244	2257
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PATENT GROUP			YOUNG, NATASHA E	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,886	<b>Applicant(s)</b> SYMONDS, KEITH	
	<b>Examiner</b> NATASHA YOUNG	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 30-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 30-36, 38, 39 and 41-58 is/are rejected.
- 7) ☒ Claim(s) 37 and 40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/31/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 30-36 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 6,510,894. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the application and patent claim a heat exchanger comprising a bonded stack of plates, alternating plates or group of plates, each plate forming said first and second plates or groups of plates having an inlet and an outlet, an outer wall of plate at least partially encompassing the continuous wall, and one or more intervening plates.

Claims 30-36 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,736,201. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the application and patent disclose a heat exchanger comprising a bonded stack of plates, alternating plates or group of plates, each plate forming said first and second plates or groups of plates having an inlet and an outlet, an outer wall of plate at least partially encompassing the continuous wall, and one or more intervening plates.

Claims 30-36 and 50-53 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,968,892. Although the conflicting claims are not identical, they are not patentably

distinct from each other because both the application and patent claim a heat exchanger comprising a bonded stack of plates, alternating plates or group of plates, each plate forming said first and second plates or groups of plates having an inlet and an outlet, an outer wall of plate at least partially encompassing the continuous wall, one or more intervening plates, and the first plate or groups of plates and/or the second plate or group of plates contain column precursors and ligaments.

Claim 30 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 7,111,672.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both the application and patent claim a heat exchanger comprising a bonded stack of plates, alternating plates or group of plates, each plate forming said first and second plates or groups of plates having an inlet and an outlet, and an outer wall of plate at least partially encompassing the continuous wall.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 30-36, 38-39, 41, and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Watton et al WO 98/55812 A1).

Regarding claim 30, Watton et al discloses a heat exchange and/or chemical reactor apparatus (see Abstract) comprising a series of plates which are stacked and

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bonded together in a fluid-tight manner (see Abstract, which discloses a bonded stack of plates and the channels (30) together forming one or more fluid passageways), the series of plates comprising alternate first and second plates or groups of plates along the stack providing flow paths for respective first and second fluids (see page 5, line 32 through page 6, line 17), each plate forming said first and second plates or groups of plates having an inlet and an outlet between which respective first or second fluid is flowable and a continuous wall to contain the flow of fluid (see page 16, line 32 through page 18, line 2 and figures 7-8), and wherein each plate comprises an outer wall at least partially encompassing the continuous wall to define a space therebetween, the spaces of each plate of the stack being in fluid communication to form a compartment running along the stack (see page 16, lines 23-30).

Claim 31 depends on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claim.

Regarding claim 31, Watton et al discloses an apparatus wherein each continuous wall comprises integral, outwardly extending loops the loops being stacked together to provide inlet and outlet reservoirs for first and second fluids the respective reservoirs communicating with the flow paths of the groups of plates via the inlet and the outlet for the respective fluids into and out of their respective groups of plates (see page 16, line 32 through page 17, line 30 and figures 7-8).

Claims 32-33 depend on claim 31 such that the reasoning used to reject claim 31 will be used to reject the dependent portions of the claims.

Regarding claim 32, Watton et al discloses an apparatus wherein the outwardly extending loops of the first plate or stack of plates provide the inlet and outlet for the first fluid (see page 17, lines 6-18 and figure 80), which a plate (80) with an inlet (81A) and an outlet (81B).

Regarding claim 33, Watton et al discloses an apparatus wherein the outwardly extending loops of the second plate or stack of plates provide the inlet and outlet for the second fluid (see page 16, line 32 through page 17, line 30 and figures 7-8), since figure 7 discloses a stack of plates separated into groups with inlet and outlet regions and figure 8 discloses a plate (80) from a group of plates, plate (80) having an inlet (81A) and an outlet (81B).

Claim 34 depends on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claim.

Regarding claim 34, Watton et al discloses an apparatus wherein the alternate first and second plate or group of plates are separated by a single intervening plate or intervening group of plates (see page 6, line 33 through page 7, line 7 and page 16, lines 23-30), which disclose an intervening mixing plate which separates the two group on the main perforated plates.

Claim 35 depends on claim 34 such that the reasoning used to reject claim 34 will be used to reject the dependent portions of the claim.

Regarding claim 35, Watton et al discloses an apparatus wherein the first and second plates or groups of plates are separated by an intervening group of plates which comprise a sandwich of single intervening plate--one or more interlayer plates--single

intervening plate (see page 16, lines 23-30 and figure 6A), which discloses intervening plate (TP) – one or more interlayer plates (P, TS, C, TS, R) – intervening plate (TP).

Claim 36 depends on claim 35 such that the reasoning used to reject claim 35 will be used to reject the dependent portions of the claim.

Regarding claim 36, Watton et al discloses an apparatus wherein the or each interlayer plate comprises an interlayer first wall and a continuous outer wall (perimeter, 82) encompassing the first wall to define an interlayer space therebetween, the region defined by the first wall being in fluid communication with said interlayer space (see page 17, lines 12-20 and figure 8), which discloses a bar (87), which divides the segment adjacent inlet loop (81A) from outlet loop (81B), extends continuously from the perimeter to the centre, thereby preventing flow between the inlet and outlet segments such that the bar is interpreted as an interlayer first wall and the perimeter (82) is the continuous outer wall.

Claim 38 depends on claim 36 such that the reasoning used to reject claim 36 will be used to reject the dependent portions of the claim.

Regarding claim 38, Watton et al discloses an apparatus wherein the interlayer space comprises part of the compartment in the stack of plates, which compartment, consequently, being in fluid communication with the region defined by the first wall of the interlayer plate (see page 16, line 32 through page 17, line 30 and figures 7-8), since figure 7 discloses a stack of plates separated into groups with inlet and outlets regions and figure 8 discloses a plate (80) from a group of plate, plate (80) having an inlet (81A) and an outlet (81B); and a bar (87), which divides the segment adjacent inlet



loop (81A) from outlet loop (81B), extends continuously from the perimeter to the centre, thereby preventing flow between the inlet and outlet segments such that the bar is interpreted as an interlayer first wall and the perimeter (82) is the continuous outer wall, and bars (84) stopping short of the centre and bars (85) stopping short of the perimeter whereby a continuous passageway (83) is provided between the segments from inlet loop (81A) to the outlet loop (81B).

Claim 39 depends on claim 34 such that the reasoning used to reject claim 34 will be used to reject the dependent portions of the claim.

Regarding claim 39, Watton et al discloses an apparatus wherein at least one of the single intervening plate (TS) has a solid portion to prevent fluid communication between said first and second groups of plates or between said first or second group of plates and the or each interlayer plate (see page 16, lines 16-29).

Claims 41 and 54 depend on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claims.

Regarding claim 41, Watton et al discloses an apparatus wherein said compartment is sealed at either end of the apparatus (see page 19, line 12 through page 20, line 20), which discloses stacked plate (12)) comprising an upper primary, unperforated plate (121) and a lower primary, unperforated plate (122) with adjacent dual passageway input layer (123) and dual passageway output layer (124) and the plates are bonded (see Abstract).

Regarding claim 54, Watton et al discloses an apparatus comprising first and second groups of plates, the first and/or second groups of plates comprising a group of

main perforated plates, wherein at least two adjacent plates of the group of main perforated plates (see Abstract) have their perforations aligned in rows with continuous ribs between adjacent rows and the adjacent plates are aligned whereby the rows of perforations in one plate overlap in the direction of the rows with the rows of perforations of an adjacent plate and the ribs of adjacent plates lie in correspondence with each other to provide discrete fluid channels extending across the plates, a channel corresponding to each row of perforations, the channels together forming one or more fluid passageways across the plates and the passageway(s) (see page 5, line 1 through page 7, line 16) where the slots and rib determine the fluid passageways in the group of main perforated plates.

Claims 30, 44, and 50-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Symonds (WO 99/66280 A1).

Regarding claim 30, Symonds discloses a heat exchange and/or chemical reactor apparatus comprising a series of plates which are stacked and bonded together in a fluid-tight manner, the series of plates comprising alternate first and second plates or groups of plates along the stack providing flow paths for respective first and second fluids, each plate forming said first and second plates or groups of plates having an inlet and an outlet between which respective first or second fluid is flowable and a continuous wall to contain the flow of fluid, and wherein each plate comprises an outer wall at least partially encompassing the continuous wall to define a space therebetween, the spaces of each plate of the stack being in fluid communication to form a compartment running along the stack (see Abstract and figures 1-2 and 7).

Claims 44 and 50 depend on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claims.

Regarding claim 44, Symonds does not disclose an apparatus wherein, in normal operation, the compartment is maintained at a pressure less than that experienced by the first and/or second fluids in the apparatus.

However, Symonds discloses that the thickness of the ligaments may be chosen to cause more or less interruption to fluid flow resulting in variations in the velocity of and turbulence in the fluid flow may be achieved by appropriately designed plates patterns and increased heat transfer and associated pressure drop (see page 5, lines 7-13), such that it would it was have been obvious to one having ordinary skill in the art at the time the invention was made to design the ligaments to achieve the property of in normal operation, the compartment is maintained at a pressure less than that experienced by the first and/or second fluids in the apparatus.

Regarding claim 50, Symonds et al discloses an apparatus wherein the first plate or groups of plates and/or the second plate or group of plates, in the flow path between the inlet and outlet thereof, contains column precursors and ligaments (see page 10, line 13 through page 11, line 8 and figures 1-3).

Claim 51 depends on claim 50 such that the reasoning used to reject claim 50 will be used to reject the dependent portions of the claim.

Regarding claim 51, Symonds et al discloses an apparatus comprising first and/or second groups of plates wherein the column precursors of adjacent plates in a group stack together to form the column and ligaments of each plate of the group are

displaced relative to those of adjacent plate(s) in the group whereby, in use, fluid flowing across the group is not only forced to follow a tortuous flow path around the columns but also over and under each ligament (see Abstract; page 12, line 14 through page 14, line 20; and figures 7-8 and 12-13).

Claims 30, 41, and 45-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Kerkman et al (US 5,078,209).

Regarding claim 30, Kerkman et al discloses a heat exchange and/or chemical reactor apparatus comprising a series of plates which are stacked and bonded together in a fluid-tight manner, the series of plates comprising alternate first and second plates or groups of plates along the stack providing flow paths for respective first and second fluids, each plate forming said first and second plates or groups of plates having an inlet and an outlet between which respective first or second fluid is flowable and a continuous wall to contain the flow of fluid, and wherein each plate comprises an outer wall at least partially encompassing the continuous wall to define a space therebetween, the spaces of each plate of the stack being in fluid communication to form a compartment running along the stack (see Abstract).

Claims 41 and 45 depend on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claims.

Regarding claim 41, Kerkman et al discloses wherein said compartment is sealed at either end of the apparatus (see Abstract).

Regarding claim 45, Kerkman et al discloses an apparatus wherein each plate of the stack comprises a centrally disposed hole defined by a surround, the aligned holes forming a bore through the stack (see figures 1-3, 5, and 7).

Claim 46 depends on claim 45 such that the reasoning used to reject claim 45 will be used to reject the dependent portions of the claim.

Regarding claim 46, Kerkman et al discloses an apparatus wherein the surround or surrounds of a first plate or group of plates adjacent one end of the stack have one or more apertures leading into the central bore (see column 4, line 50 through column 5, line 23 and figure 2), which discloses an opening (30) where fluid travels up the heat exchanger and through outlet (92) through conduit (80) as a return path shown by (86) to filter (14) of figure 1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Symonds (WO 99/66280 A1).

Claim 52 depends on claim 51 such that the reasoning used to reject claim 51 will be used to reject the dependent portions of the claim.

Regarding claim 52, Symonds et al does not disclose an apparatus wherein the column precursors are arranged in sectors, each sector separated from the next by a barrier of thickness (height) equal to the plate thickness.

However, Symonds discloses that the column precursors, and hence the columns, may, in a preferred embodiment, be of circular transverse cross-section but this not essential and any other desired cross-section may be utilised (see page 4, lines 8-12) such that it would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the precursors into sectors, each sector separated from the next by a barrier of thickness (height) equal to the plate thickness.

Claim 53 depends on claim 52 such that the reasoning used to reject claim 52 will be used to reject the dependent portions of the claim.

Regarding claim 53, Symonds et al does not disclose an apparatus wherein alternate barriers extend one from the outer peripheral edge of its plate towards but not reaching the centre, and the next from or towards the centre towards but not reaching the outer peripheral edge.

However, Symonds discloses that the column precursors, and hence the columns, may, in a preferred embodiment, be of circular transverse cross-section but this not essential and any other desired cross-section may be utilised (see page 4, lines

8-12) such that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have alternate barriers extend one from the outer peripheral edge of its plate towards but not reaching the centre, and the next from or towards the centre towards but not reaching the outer peripheral edge.

Claims 42-43 and 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watton et al (WO 98/55812).

Claim 42 depends on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claim.

Regarding claim 42, Watton et al does not disclose an apparatus wherein said compartment is in operative communication with detection means, said detection means being operable to detect the presence of either or both of said first and second fluids in said compartment.

However, Watton et al discloses any reaction caused by the injection of a first fluid into a second fluid can be controlled by the pressure differential between the two streams, the size, numbers and spacing of the injection holes and by sandwiching the second stream between the first stream and a coolant or heating stream, as appropriate (see page 6, line 33 through page 7, line 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said compartment is in operative communication with detection means, since it is known that for two different fluid there would exist a differential pressure such that it can be determined from the differential pressure the presence of either or both of said first and second fluids in said compartment.

Claim 43 depends on claim 42 such that the reasoning used to reject claim 42 will be used to reject the dependent portions of the claim.

Regarding claim 43, Watton et al does not disclose an apparatus wherein said detection means may be selected from one or more of pressure sensors, such as valves or pressure transducers or devices which can directly detect or indicate the presence of leaking fluids such as spectrometers, spectrographs.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said detection means selected from one or more of pressure sensors, such as valves or pressure transducers or devices which can directly detect or indicate the presence of leaking fluid such as spectrometer spectrographs, since it was known in the art that pressure sensors detect difference in pressure and spectrometers and spectrographs measure or detect light intensity, which may be affected by the presence of leaking fluid (see MPEP 2144.03 (A-E)).

Claims 55-57 depend on claim 30 such that the reasoning used to reject claim 30 will be used to reject the dependent portions of the claims.

Regarding claim 55, Watton et al does not disclose an apparatus used in an aircraft and used to cool lubricating oil with fuel, the first fluid being oil, the second fluid being fuel.

However, Watton et al is capable of being used in an aircraft and to cool lubricating oil with fuel, the first fluid being oil, the second fluid being fuel since it is a heat exchanger for a number of fluids (see page 16, lines 32 through 18, line 2 and figures 7-8) such that it would have been obvious to one having ordinary skill in the art



at the time the invention was made to use the apparatus in an aircraft and to use lubricating oil to cool fuel where the first fluid is the oil and the second fluid is the fuel.

Regarding claim 56, Watton et al does not disclose an apparatus used in an aircraft and used to heat fuel with heated air, the first fluid being fuel, the second fluid being air.

However, Watton et al is capable of being used in an aircraft and to heat fuel with heated air, the first fluid being fuel the second fluid being air since it is a heat exchanger for a number of fluids (see page 16, lines 32 through 18, line 2 and figures 7-8) such that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the apparatus in an aircraft and to use heated air to heat fuel where the first fluid is the fuel and the second fluid is air.

Regarding claim 57, Watton et al does not disclose an apparatus comprising one or more flow paths for subsidiary fluids, the apparatus comprising means arranged to inject said subsidiary fluids into the flow of the one or both of said first and second fluids.

However, Watton et al discloses injecting a first fluid into a second fluid (see page 6, line 33 through page 7, line 7) and four fluid streams housed in the apparatus (see page 16, line 32 through page 17, line 5) such that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have one or more flow paths for subsidiary fluids and to arrange the apparatus to inject said subsidiary fluids into the flow of the one or both of said first and second fluids.

Claim 58 depends on claim 57 such that the reasoning used to reject claim 57 will be used to reject the dependent portions of the claim.

Regarding claim 58, Watton et al discloses an apparatus comprising a third plate or group of plates for a subsidiary, an intervening plate being present between said third plate or group of plates and one or both of said first and second plate or groups of plates, the intervening plate having holes through its thickness to allow said third fluid to be injected into the flow of said first and/or second fluid (see page 16, lines 23-30 and figure 6A).

In addition, Watton et al discloses injecting a first fluid into a second fluid (see page 6, line 33 through page 7, line 7) and four fluid streams housed in the apparatus (see page 16, line 32 through page 17, line 5) such that the apparatus is capable of having one or more flow paths for subsidiary fluids, the apparatus comprising means arranged to inject said subsidiary fluids into the flow of the one or both of said first and second fluids.

Claims 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerkman et al (US 5,078,209) as applied to claim 46 above, and further in view of Yamanaka et al (US 4,836,276).

Claim 47 depends on claim 46 such that the reasoning used to reject claim 46 will be used to reject the dependent portions of the claim.

Regarding claim 47, Kerkman et al does not disclose an apparatus wherein the bore contains a movable valve member which, in a first position, prevents flow through the bore and, in a second position, provides a fluid bypass route through the bore.

Yamanaka et al disclose an apparatus wherein the bore contains a movable valve member which, in a first position, prevents flow through the bore and, in a second position, provides a fluid bypass route through the bore (see column 3, lines 38-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Kerkman et al with the teachings of Yamanaka et al to control fluid flow through the bore.

Claim 48-49 depend on claim 47 such that the reasoning used to reject claim 47 will be used to reject the dependent portions of the claims.

Regarding claim 48, Kerkman et al does not disclose an apparatus wherein the movable valve member has a stem and valve seat, the latter co-operating with a corresponding seat defined in the central bore.

Yamanaka et al discloses an apparatus wherein the movable valve member has a stem and valve seat, the latter co-operating with a corresponding seat defined in the central bore (see column 3, lines 38-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Kerkman et al with the teachings of Yamanaka et al to control fluid flow through the bore.

Regarding claim 49, Kerkman et al does not disclose an apparatus wherein operation of the bypass valve is temperature and/or pressure controlled.

Yamanaka et al discloses an apparatus wherein operation of the bypass valve is temperature and/or pressure controlled (see column 3, lines 38-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Kerkman et al with the teachings of Yamanaka et al to control fluid flow through the bore.

***Allowable Subject Matter***

Claims 37 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 37, the limitations of an apparatus having an interlayer first wall and the interlayer first wall comprises one or more vents extending through, say, half the thickness of the interlayer plate was not disclosed or suggested in the prior art.

Regarding claim 40, the limitation of an outer wall encompassing its solid periphery and joined to its solid periphery, a space being defined between the outer wall and the solid periphery which, in the stack of plates, communicates with the spaces of the plates of the first and second group of plates, and interlayer plate if present.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is (571)270-3163. The examiner can normally be reached on Mon-Thurs 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NY

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797